

**Notice of Allowability**

Application No.

09/303,356

Applicant(s)

BACHMANN ET AL.

Examiner

Art Unit

Baoquoc N. To

2162

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 06/01/2007.
2. ☒ The allowed claim(s) is/are 9, 11-13, 16, 19 and 21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 20070609.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-8 and 17 are canceled, claims 21 and 22 are newly added and claim 9, 11 and 16 are amended in the amendment filed on 12/12/2006. claims 9-16 and 18-22 are pending in this application.

### ***Drawings***

2. The formal drawing filed on 07/16/2001 is corrected and accepted by the examiner.

### **EXAMINER'S AMENDMENT**

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Barry Jones, on 06/01/2007.

Please amend the application as follow:

9. (Currently amended) A method, in a data processing system, for deleting entries from a directory in which directory information is stored in a set of database tables, comprising the steps of:

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receiving a request at the data processing system to delete a directory entry from a directory, wherein the directory service is a Lightweight Directory Access Protocol (LDAP) directory service and the database is managed by a relational management service;

responsive to receiving the request to delete a directory entry, determining to tag the directory entry for subsequent deletion by setting a creation time ~~an attribute~~ of the directory entry to a predetermined value;

updating a first database table storing the creation time ~~attribute~~ of the directory entry;

responsive to a search by the data processing system for directory entries that satisfy a search query, excluding tagged directory entries from search results that otherwise satisfy the search query;

periodically searching for tagged during entries during a cleanup process interval; and

deleting by the data processing system references to the tagged directory entries throughout the set of database tables.

10. (Canceled).

11. (Currently Amended) the method as described in claim 9 ~~[[10]]~~, wherein the predetermined ~~[[given]]~~ value is a null value.

14. (canceled).

15. (Canceled).

16. (Currently amended) A computer program product in a computer-readable storage medium for deleting entries from a directory in which directory information is stored in a set of database tables, comprising:

[[means]] instructions for receiving a request to delete a directory entry from a directory, wherein the directory service is a Lightweight Directory Access Protocol (LDAP) directory service and the database is managed by a relational management service;

[[means]] instructions for determine, responsive to receiving the request to delete a directory entry, to tag the directory entry for subsequent deletion by setting a creation time an attribute of the directory entry to a predetermined value;

[[means]] instructions for updating a first database table storing the creation time attribute of the directory entry;

[[means]] instructions responsive to a search for directory entries that satisfy a search query for excluding tagged entries from search results that otherwise satisfy the search query;

[[means]] instructions for periodically searching for tagged directory entries in the first database table during a cleanup process interval; and

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[[means]] instructions for deleting references to the tagged directory entries throughout the set of database tables.

18. (Canceled).

19. (Currently amended) A directory service, comprising:

a bus;

a communication unit connected to the bus;

a storage device connected to the bus, wherein the storage device includes computer usable program code;

a directory organized as a naming hierarchy having a plurality of entries each represented by a unique identifier, wherein the directory is compliant with the Lightweight Directory Access Protocol (LDAP);

a relational database management system having a backing store for storing directory data in a set of database entries; [[and]]

a processor unit connected to the bus, wherein the processor unit executes the computer usable program to delete ~~means for deleting~~ entries from the directory[[.]]  
~~comprising: ;~~

~~means for determining,~~ responsive to receiving the request to delete a directory entry, [[to]] tag the directory entry for subsequent deletion by setting ~~an attribute~~ a creation time of the directory entry to a predetermined value;

~~means for updating~~ update a first database table storing the attribute of the directory entry;

~~means for periodically search~~ ~~searching for~~ tagged directory entries in the first database table during a cleanup process interval; [[and]]

~~means for deleting~~ delete references to the tagged directory entries throughout the set of database tables; and

~~means responsive to a search for directory entries that satisfy a search query,~~  
excluding ~~for excluding~~ tagged directory entries from search results that otherwise satisfy the search query.

20. (Canceled).

22. (Canceled).

### ***Allowable Subject Matter***

4. Claims 9, 11-13, 16, 19 and 21 are allowed over prior arts made of record.

The following is an examiner's statement of reasons for allowance:

The examiner agrees with the applicant argument that "the Examiner has rejected claims 4, 9-13, and 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Peters in view of Gallant and further in view of Lee. By this response claim 4 has been canceled. This rejection is respectfully traversed. As discussed above, since the Lee

reference was filed after April 29, 1999, the Lee reference does not fall under 35 U.S.C. § 102 and, thus, is not prior art. Therefore, the rejection of claims 9-13 and 17-20 under 35 U.S.C. § 103 is improper and should be withdrawn” and do not teach “receiving a request at the data processing system to delete a directory entry from a directory, wherein the directory service is a Lightweight Directory Access Protocol (LDAP) directory service and the database is managed by a relational management service; and responsive to receiving the request to delete a directory entry, determining to tag the directory entry for subsequent deletion by setting a creation time of the directory entry to a predetermined value

Claims 11-13 and 21 depended on claim 9; therefore, claims 11-13 and 21 are allowed under the same reason as to claim.

Claim 14 is a method recited similar limitation as to claim 1; therefore, claim 11 is allowed under the same reason.

Claim 16 is a computer program product including the instruction to perform the steps similar to claim 9; therefore, claim 16 is rejected under the same reason as to claim 9.

Claim 19 is a directory service which including a combination of hardware and software to perform the steps similar to claim 9; therefore, claims 19 is allowed under the same reason as to claim 9.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

#### **Patent and Publication:**

Ingraham et al.	(US. Patent No. 7,024,430)	Patent date: 04/2006.
Duprey et al.	(US. Patent No. 6,671,705)	Patent date: 12/2003.
Kloth et al.	(US. Patent No. 6,570,877)	Patent date: 05/2003.
Rubin, Bradley Scott	(US. Patent No. 5,778,378)	Patent date: 07/1998.
Corbin, John R.	(US. Patent No. 5,881,241)	Patent date: 03/1999.
Belsan et al.	(US. Patent No. 5,581,724)	Patent date: 12/1996.
Lahrson et al.	(US. Patent No. 3,585,601)	Patent date: 06/1971.
Gusack, Mark David	(US. Patent No. 6,112,209)	Patent date: 08/2000.
Rubin, Bradley Scott	(US. Patent No. 7,089,532)	Patent date: 08/2006.
Chen et al.	(US. Patent No. 6,772,179)	Patent date: 08/2004.

#### **NPL:**

Pramod G. Joisha Compiler Optimizations for nondeferred reference: counting garbage collection, International Symposium on Memory management. pages 150-161, 2006.



Pascal Fradet. Collecting more garbage, Conference on LISP and Functional Programming, Proceeding of the 1994 ACM conference and functional programming, pages 24-33, 1994.

Hertz et al. Quantifying the performance of garbage collection vs. explicit memory management, Conference on Object Oriented Programming Systems languages and Applications, ACM: Association for Computing Machinery, pages 313-326, 2005.

Kiskov et al. Highly available distributed services and fault-tolerant distributed garbage collection, Annual ACM symposium on Principles of distributed computing, ACM Press, pages 29-39, 1986.

Fessant et al. An implementation of complete, asynchronous, distributed garbage collection, Conference on Programming Language Design and implementation, ACM Special Interest Group on Programming Languages, pages 152-161, 1998.

Roy et al. Garbage collection in object-oriented databases using transactional cyclic reference counting, The VLDB Journal-The International Journal on Very Large Data Bases, Vol. 7, Issue 3, pages 179-193, August 1998.

Henry G. Baker CONS should not CONS its argument, or, a lazy alloc is a smart alloc, ACM SIGPLAN Notices, Vol. 27, Issue 3, pages 24-34, March 1992.

Matthias Meyer A true hardware read barrier, Internal Symposium on Memory management, ACM Press, pages 3-16, 2006.

Abdullahi et al. Garbage collection the Internet: a survey of distributed garbage collection, ACM Computing Surveys (CSUR), ACM Press, pages 330-373, 1998.

Tel et al. the derivation of distributed termination detection algorithms for garbage collection schemes, ACM Transactions on Programming Languages and Systems (TOPLAS), Vol. 15, Issue 1, pages 1-35, 1993.

**Contact Information**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is at 571-272-4041, or unofficial fax number for the purpose of discussion (571) 273-4041 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached at 571-272-4107.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231.


The fax numbers for the organization where this application or proceeding is assigned are as follow:

(571) 273-8300 [Official Communication]

BQ To

June 9th, 2007



  
Primary Examiner  
Cam Y. Truong